

WHAT IS CLAIMED IS:

1. A high-density multi-port-module patch panel system, comprising:

a rack having a first rail and a second rail;

a patch panel frame mounted to the rack, the patch panel frame having a front face substantially residing in a first plane;

a first plurality of multi-port modules mounted to the patch panel frame, the ports of the first plurality of multi-port modules opening in a direction which is at a first angle, relative to a normal line extending away from the first plane, such that the ports of the first plurality of multi-port modules open toward the first rail of the rack; and

a second plurality of multi-port modules mounted to the patch panel frame, the ports of the second plurality of multi-port modules opening in a direction which is at a second angle, relative to a normal line extending away from the first plane, such that the ports of the second plurality of multi-port modules open toward the second rail of the rack.

2. The high-density multi-port-module patch panel system of claim 1, wherein each of the first and the second plurality of multi-port modules have plural ports for accepting an electrical connector.

3. The high-density multi-port-module patch panel system of claim 1, wherein each of the first and the second plurality of multi-port modules have plural ports for accepting an optical connector.

4. The high-density multi-port-module patch panel system of claim 1, wherein each of the first and the second plurality of multi-port modules have plural ports arrayed in a vertical column.

5. The high-density multi-port-module patch panel system of claim 1, wherein the first plurality of multi-port modules are located side-by-side in the patch panel frame, and the second plurality of multi-port modules are located side-by-side in the patch panel frame.

6. The high-density multi-port-module patch panel system of claim 1, further comprising:

a first cable manager on the first rail of the rack and a second cable manager on the second rail of the rack, the first and the second cable managers holding cables connected to the first and the second plurality of multi-port modules, respectively.

7. The high-density multi-port-module patch panel system of claim 6, wherein the first vertical cable manager and the second vertical cable manager are spools.

8. The high-density multi-port-module patch panel system of claim 1, wherein the patch panel frame includes a centrally located reinforcement bar, and the first plurality of multi-port modules are positioned between the reinforcement bar and the first rail, and the second plurality of multi-port modules are positioned between the reinforcement bar and the second rail.

9. The high-density multi-port-module patch panel system of claim 1, wherein the first plane is co-planer with a second plane containing the first and the second rails of the rack.

10. The high-density multi-port-module patch panel system of claim 1, wherein each of the multi-port modules has a plurality of ports and a plurality of label surfaces adjacent to the plurality of ports.

11. The high-density multi-port-module patch panel system of claim 1, wherein the patch panel frame comprises slots configured at the first angle and the second angle to

accommodate the first and the second plurality of multi-port modules, respectively.

12. The high-density multi-port-module patch panel system of claim 11, wherein the slots are configured to allow only one-way insertion of the multi-port modules.

13. The high-density multi-port-module patch panel system of claim 11, wherein the slots lock the multi-port modules to the patch panel frame after the multi-port modules are fully inserted in the slots.

14. The high-density multi-port-module patch panel system of claim 1, wherein the patch panel frame is formed of sheet metal.

15. A high-density multi-port-module patch panel for attachment to a rack having at least first and second rails, the patch panel comprising:

- a patch panel frame having a front face substantially residing in a first plane;
- a first plurality of multi-port modules mounted to the patch panel frame, the ports of the first plurality of multi-port modules opening in a direction which is at a first angle, relative to a normal line extending away from the first plane, such that the ports of the first plurality of multi-port modules would open toward the first rail of the rack when

the patch panel frame is attached to the rack; and

a second plurality of multi-port modules mounted to the patch panel frame, the ports of the second plurality of multi-port modules opening in a direction which is at a second angle, relative to a normal line extending away from the first plane, such that the ports of the second plurality of multi-port modules would open toward the second rail of the rack when the patch panel is attached to the rack.

16. The high-density multi-port-module patch panel system of claim 15, wherein each of the multi-port modules has a plurality of ports and a plurality of label surfaces adjacent to the plurality of ports.

17. The high-density multi-port-module patch panel system of claim 15, wherein the patch panel frame comprises slots configured at the first angle and the second angle to accommodate the first and the second plurality of multi-port modules, respectively.

18. The high-density multi-port-module patch panel system of claim 17, wherein the slots are configured to allow only one-way insertion of the multi-port modules.

19. The high-density multi-port-module patch panel system of claim 17, wherein the

slots lock the multi-port modules to the patch panel frame after the multi-port modules are fully inserted in the slots.

20. A method of organizing cabling in a high-density multi-port-module patch panel system, comprising the steps of:

providing a rack, the rack having a first rail and a second rail;

attaching a patch panel frame to the rack, the patch panel frame having a front face substantially residing in a first plane; .

attaching a first plurality of multi-port modules to the patch panel frame, ports of the first plurality of multi-port modules opening in a direction which is at a first angle, relative to a normal line extending away from the first plane, such that the ports of the first plurality of multi-port modules open toward the first rail of the rack; and

connecting a first cable to a port of the first plurality of multi-port modules.

21. The method of organizing cabling in a high-density multi-port-module patch panel system of claim 20, further comprising the step of

providing a first cable manager on the first rail of the rack; and

routing the first cable over the first cable manager.

22. The method of organizing cabling in a high-density multi-port-module patch panel system of claim 21, further comprising the step of

attaching a second plurality of multi-port modules to the patch panel frame, the ports of the second plurality of multi-port modules opening in a direction which is at a second angle, relative to the normal line extending away from the first plane such that the ports of the second plurality of multi-port modules open toward the second rail of the rack; and

connecting a second cable to a port of the second plurality of multi-port modules.

23. The method of organizing cabling in a high-density multi-port-module patch panel system of claim 22, further comprising the step of

providing a second cable manager on the second rail of the rack; and

routing the second cable over the second cable manager.

24. The method of organizing cabling in a high-density multi-port-module patch panel system of claim 23, wherein said steps of attaching the first and second plurality of multi-port modules to the patch panel frame includes inserting the first and second plurality of multi-port modules into slots formed in the patch panel frame.